

CLAIM AMENDMENTS

1-17. (Cancelled)

18. (New) A semiconductor apparatus for an automobile comprising:

a module having a semiconductor element for switching control;

a base member contacting said module at a surface thereof;

a case contacting said base member and having a fluid path providing for flow of a cooling medium;

wherein said fluid path comprises a cooling part for cooling said module through said base member, an introducing part for introducing said cooling medium supplied from an outside into said cooling part, and a draining part for draining said cooling medium introduced into said cooling part to the outside;

wherein a cross-section area of said fluid path from said introducing part to said cooling part increases at a predetermined rate in a direction in which said cooling medium flows,

wherein a cross-section area of said cooling path has a predetermined area, and

wherein a cross-section area of said fluid path from said cooling part to said draining part decreases at a predetermined rate in the direction in which said cooling medium flows.

19. (New) A semiconductor apparatus for an automobile according to Claim 18, wherein said semiconductor element includes an Insulated Gate Bipolar

Transistor (IGBT) and a Free Wheel Diode (FWD), and wherein said semiconductor element defines an inverter circuit.

20. (New) A semiconductor apparatus for an automobile according to Claim 18, wherein said module has plural circuit substrates, and wherein at least one of said substrates has an arm.

21. (New) A semiconductor apparatus for an automobile according to Claim 20, wherein said substrates have attached metal foils on a surface and a back surface and contact with said base member.

22. (New) A semiconductor apparatus for an automobile according to Claim 18, wherein said module has upper arms and lower arms at each phase for converting a DC current from a battery to a 3 phase AC current.

23. (New) A semiconductor apparatus for an automobile according to Claim 18, wherein said module converts a DC current from a battery to a 3 phase AC current in a switching operation by Pulse Width Modulation (PWM) control.

24. (New) An inverter apparatus for an automobile comprising:
plural substrates defining an inverter circuit and having a semiconductor element converting DC power from a battery to AC power by a switching operation;
a base member carrying said plural substrates; and

a case made by aluminum die-casting forming a fluid path for a flow of cooling medium from a radiator;

wherein said fluid path comprises a cooling part having plural cooling fins for cooling said substrates through said base member, an introducing part for introducing said cooling medium supplied from an outside into said cooling part, and a draining part for draining said cooling medium introduced into said cooling part to the outside;

wherein a cross-section area of said fluid path from said introducing part to said cooling part increases at a predetermined rate in a direction in which said cooling medium flows,

wherein a cross-section area of said cooling path has a predetermined area, and

wherein a cross-section area of said fluid path from said cooling part to said draining part decreases at a predetermined rate in the direction in which said cooling medium flows.

25. (New) An inverter apparatus for an automobile according to Claim 24, wherein said inverter circuit includes an Insulated Gate Bipolar Transistor (IGBT) and a Free Wheel Diode (FWD), and wherein said inverter circuit controls by switching with a pulse width modulation control.

26. (New) An inverter apparatus for an automobile according to Claim 25, wherein at least one of said substrates has an upper arm, a lower arm, or a pair of upper and lower arms.

27. (New) An inverter apparatus for an automobile according to Claim 24, wherein said substrates have attached metal foils on a surface and a back surface and contact with said base member.

28. (New) A semiconductor apparatus for an automobile according to Claim 24, wherein said inverter circuit has upper arms and lower arms at each phase for converting a DC current from a battery to a 3 phase AC current.

29. (New) A semiconductor apparatus for an automobile according to Claim 24, wherein said inverter circuit converts a DC current from a battery to a 3 phase AC current in a switching operation by Pulse Width Modulation (PWM) control.

30. (New) A semiconductor apparatus for an automobile according to Claim 24, wherein said draining part connects to a cooling part of a motor controlled by said inverter circuit and drains said cooling medium.